

REMARKS

This Amendment is in response to the Official Action mailed on February 16, 2005, the shortened period for responding with a three-month extension of time being set to expire on August 16, 2005. A request for a three-month extension of time is submitted herewith. Claims 1, 2, 5-8, and 12-16 are pending in the application.

I. Claim Amendments

Applicants have amended claim 1 to include the limitation that the neutralizing chemical liquid is added to the pure water in the rinse bath "after a predetermined period of time from the start of rinsing by feeding of the pure water to the rinse bath has elapsed." As this limitation appears in original claim 3, Applicants contend that no new matter has been added and that there is support in the specification for this claim amendment.

Claim 8 has been amended to recite "continuously overflowing the rinse bath to discharge residual neutralizing chemical and salt" and that the neutralizing chemical is added to the pure water in the rinse bath "after a predetermined period of time from the start of feeding of the pure water to the rinse bath has elapsed." As this limitation appears in original claims 9 and 10, Applicants contend that no new matter has been added and that there is support in the specification for this claim amendment.

New claims 13 and 14 have been added and recite limitations regarding the resistivity of the pure water in the rinse bath. Applicants contend that support for these new claims can be found in paragraphs 40-42 of the pending application and that no new matter has been added.

New claims 15 and 16 have been added and recite that the cleaned object is either a semiconductor wafer or a glass element for a liquid crystal display. Applicants contend that support for these new claims can be found in paragraph 2 of the pending application and that no new matter has been added.

Claims 3, 4, 9, 10, and 11 have been canceled.

### **II. 35 U.S.C. § 112 Rejections**

The Examiner has rejected claims 1-12 under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner contends that claims 1 and 8 are indefinite because it is unclear what is meant by "pure water." Applicants contend that the term "pure water" is one that is well known in the art. For example, the attached technical dictionary published by SEMA, Inc., a consortium that develops advanced semiconductor manufacturing processes, materials, and equipment for member companies and which is well known in the industry, provides the following definition of "pure water": "water suitable for use in semiconductor processing because of the very small level of impurities." SEMATECH Official Dictionary, Revision 5.0 (August 31, 1995). Applicants therefore contend that "pure water" is one known and understood in the art and that no further support is needed in the specification to define same. Applicants therefore respectfully assert that the Examiner's rejections are overcome.

### **III. 35 U.S.C. § 102(b) Rejections**

The Examiner has rejected claims 1-4, and 7-11 based upon either or both of U.S. Patent No. 4,599,116 to King ("King") and U.S. Application No. 2001/0047815 to Biebl ("Biebl"). For the reasons below, and in view of the amendments

made herein to the claims, Applicants contend that the Examiner's rejections are overcome.

*King* discloses an alkaline cleaning process for cleaning aluminum containers, wherein aluminum fines and organic soils on the surfaces thereof are removed by contacting the surfaces with an aqueous alkaline cleaning composition. Thereafter, the clean surfaces are rinsed by an aqueous solution. *King* further discloses overflowing the rinse and/or neutralizing an alkaline buildup by adding acid to maintain the pH of the rinse solution as either neutral or acidic. This process eliminates brown oxide discoloration of the alkaline cleaned aluminum containers.

The disclosure of *King* greatly differs from the presently claimed invention. As described above, the chemicals added in *King* are used to maintain the pH of the rinsing fluid. They are not used to convert the chemical composition of the cleaning chemical, such as in Applicant's invention. Additionally, *King* fails to teach or suggest the limitation that the acid is added to the pure water in the rinse bath after a predetermined period of time from the start of rinsing by feeding of the pure water to the rinse bath has elapsed. In this regard, *King* thus fails to teach the limitations of Applicants' claimed invention.

The Examiner further relies upon *Biebl* to support her 35 U.S.C. § 102(e) rejection. Turning to the method of *Biebl*, in steps (a) and (b), a first cleaning fluid, such as hydrochloric acid, is used to fill a container containing the substrate to be cleaned. See Paragraph 23. In step (c), identified as "OF-rinse", a rinsing fluid, such as ionized water, is introduced from the bottom of the container so that the first cleaning fluid is rinsed from the substrate. See

Paragraph 27. In step (d), the rinse bath and any remaining cleaning fluid in the container is drained. Then, in steps (e)(f) and (g) of Fig. 2, a second cycle of the cleaning process begins with the introduction of the SC1 fluid, at the bottom of the container.<sup>1</sup>

The specification and drawings fail to teach or suggest the addition of a neutralizing chemical to the rinse bath for neutralizing the cleaning fluid.

First, the SC1 solution is not a "neutralizing chemical," such as suggested by the Examiner, but is a treatment fluid used to provide a second round of chemical treatment to the substrate. Indeed the specification states that the SC1 solution is used for "intensively cleaning" the substrates. See Paragraph 30. Moreover, the specification states that the SC1 solution could alternatively be used in place of the first cleaning liquid introduced in step (a). See Paragraphs 30-31. Thus, the SC1 fluid is, in fact, used as a cleaning fluid and not for neutralizing the previously introduced cleaning chemical liquid.

Second, the SC1 solution is not added to the rinsing fluid. Step (d) illustrates that the overflow rinse is first evacuated from the container prior to the addition of the SC1 solution. See FIG. 2 and Paragraph 29. The SC1 solution is therefore added as the preliminary treatment solution used to clean the substrate in the second round of treatment. Thus, this limitation is also not met by Biebl.

Biebl also fails to meet the limitation that a neutralizing chemical liquid is fed to the pure water in the rinse bath during the "continuous feeding" of pure water to the rinse bath.

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<sup>1</sup> It is Applicants' understanding, that according to FIGS. 1-3, and corresponding application DE 19738147, the method step defined as "Step D" in

As discussed above, the rinse water is evacuated from the container prior to the addition of the SC1 solution. Thus, even if the Examiner somehow construed the SC1 solution as a neutralizing solution, such solution is not added during the "continuous feeding" of pure water. Accordingly, *Biebl* fails to teach or suggest this claimed limitation of Applicants' invention.

Finally, *Biebl* fails to teach that the SC1 solution is added to the pure water in the rinse bath "after a predetermined period of time from the start of rinsing by feeding of the pure water to the rinse bath has elapsed." Indeed, *Biebl* provides no teaching or suggestion as to any time limitation regarding the introduction of the SC1 solution.

For all of these reasons, Applicants respectfully contend that the Examiners 35 U.S.C. § 102(b) rejections are overcome.

#### **IV. 35 U.S.C. § 103 Rejections**

The Examiner has rejected dependent claims 5-6 and 12 under 35 U.S.C. § 103(a) as being unpatentable over *Biebl*, in light of U.S. Patent No. 5,853,491 to *Schulz* ("*Schulz*"). In view of the above arguments, Applicants assert that *Biebl* does not teach the limitations of Applicants' invention. Accordingly, *Schulz*, in combination with *Biebl*, fail to teach the limitations of Applicants' claimed invention. Thus, Applicants respectfully contend that the Examiner's 35 U.S.C. § 103 rejections are overcome.

#### **V. Conclusion**

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited. If,

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Paragraph 30 of *Biebl* actually refers to "Step E", and is a clerical error.

however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that she telephone Applicants' attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: August 16, 2005

Respectfully submitted,

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